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A SOURCE FOR MATERIAL OF PROTOZOAN AND OTHER PARASITES

Some years ago the writer sent to the Zoological Station at Naples for intestines of the marine fish *Box boops*, preserved by several different methods. The material preserved in alcohol proved to have the Opalinidae of the intestines in a good state of preservation. This suggested the possibility that museum specimens of Anura might have their Opalinidae sufficiently well preserved for taxonomic study. This proved to be the case. Over 1100 good infections of Opalinids were found in the Anuran material of the United States National Museum. In many cases the material was good enough for study of nuclear phenomena which were used in specific distinctions, the number of macrochromosomes being a very usable diagnostic character. Animals that had been from 40 to 80 years in their hosts in alcohol upon the Museum shelves yielded good Opalinid material. Other Ciliates also were well preserved, as were also Trematodes and, of course, Nematodes.

Specimens of Anura are usually preserved in alcohol of not more than 70% strength. When very strong alcohol was used the Opalinids were well preserved, but the tissues of the host were so hard as to make it difficult to obtain the parasites without injury to the hosts. A number of frogs were opened which had evidently lain long in very weak alcohol, their tissues being so flabby as to tear readily, but even in such flabby specimens there were found Opalinids well enough preserved for taxonomic study. On the other hand, Anura preserved in formalin seldom show any Opalinids and these, when found, are difficult to stain and are unsatisfactory for study. The flukes also are in poor condition. Generally the intestinal lining itself is degenerate and broken down, being scattered in flakes through the lumen of the intestine.

Rectal parasites can be removed from preserved specimens of Anura without doing appreciable injury to these specimens. A curved cut on the ventral surface, a little to the right of the mid line, enables one to lift a flap of the abdominal wall and expose the rectum. A slit through the rectum, long enough to admit a very narrow spatula, allows collection of the rectal contents with its Opalinids and other parasites. All this really does no harm to the specimen as a museum specimen. Indeed good collectors are accustomed to slit the abdomen in Anura before placing them in the preserving fluid.

Zoological explorers and others preserving material for general study should have in mind not only the animals themselves, but their parasites as well. Consideration for the protozoan parasites would lead to preservation of Anura in alcohol and not in formalin.

If organisms so delicate as Ciliates are found well preserved in museum specimens of Anura, there are doubtless many other parasites to be found in similarly preserved material of other groups. There is here a mine of abundant material for parasitological studies. Not many museums would be so generous as the United States National Museum in allowing search of all their preserved specimens in a group for parasite material, but most working museums would have much accessory material which they would be glad to have so used, and around most laboratories are many jars of unused material in which must be parasites well enough preserved for taxonomic study.

The Orchard Laboratory, Oberlin, Ohio

Maynard M. Metcalf